



MUNITIONS SAFETY INFORMATION ANALYSIS CENTER

CENTRE D'INFORMATION ET D'ANALYSE SUR LA SECURITE DES MUNITIONS

# Lettre du



# Newsletter



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## THE MARAÑOSA TECHNOLOGICAL INSTITUTE (ITM)

*For further information do not hesitate to contact ITM at [itm@oc.mde.es](mailto:itm@oc.mde.es)*

The ITM (**The Marañosa Technological Institute**) is the technological institution for Defence Research and Development in Spain and belongs to the Spanish Ministry of Defence. It encompasses seven different activities: armament, electronics, metrology, CBN (Nuclear, Biological and Chemical) and materials, optronics and acoustics, military vehicles and ICTs (Information and Communication Technologies).

The ITM is the most important change that the Secretary of State for Defence has made, which will effect in particular the General Directorate of Armament and Material (DGAM). Significant improvements are being made to the budget, as well as to human and material resources in order to meet the challenge of successfully building a state-of-the-art R&D centre with an important **international projection** in the field of Defence Technology. These facilities will be and working at full capacity by the end of year 2011.

### INSTITUTE LOCATION

There are three facilities belonging to the ITM, located in different places in Spain:

- The **Central Campus**, in San Martín de la Vega in the Madrid South-East Regional Park.
- "**Torregorda**" **Firing Range** in the Natural Bay Park in Cádiz.
- **Radio-electric Test & Analysis Center** in Guadalajara.

The **Central Campus** is situated in the middle of the **Madrid South-**



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**East Regional Park** in the **Marañosa estate**, which extends for more than 700 hectares (two thirds of it are part of a natural reserve), where it benefits from its proximity to Madrid, which is the hub of increasing industrial development, including important Defence companies, and has an excellent transportation network by land, railway and air (near the Barajas and Torrejon airports). In this exceptional area, the Marañosa Technological Institute is very much involved in the **conservation and improvement of the environment**.

### FOCUS ON DEFENCE TECHNOLOGY

One of the key objectives of the Spanish Ministry of Defence is the development of scientific and technological knowledge applied to Defence. This is to be enhanced and accomplished with the implementation of the ITM, which is focused on international Defence R&D and innovation in collaboration with private partners, universities and other research Institutes.

General José Luis Orts, the ITM Director Manager said, "The main target of the ITM is to become a leading international R&D centre to serve modern society in general, and the army in particular". Similarly, the Spanish Ministry of Defence declared in 2008: "We will count on current and future technologies that improve the operating efficiency, the co-ordination among the armies, the protection of our troops and the researching initiatives with civilian and military applications".



### IMPLEMENTATION OF ITM

In 2001, the Secretary of State for Defence enacted a directive to merge all the technological institutions belonging to the General Directorate of Armament and Material into a single institution - the ITM.

The ITM is made up as follows:

- the Naval R&D Institution (CIDA),
- Marañosa National Factory (FNM),
- Central Chemical and Armament Laboratory (LQCA),
- Precision Workshop and Artillery Electronic Centre (TPYCEA),
- Carabanchel Testing Facilities (PEC),
- Torregorda Testing Facilities (CET).

### STRATEGIC PLAN: THE VALUE OF SERVING

To attain excellence in Defence R&D and innovation the ITM counts on two key levers: a motivated high-performance team and an integrated resource management where adaptation skills and service commitment to both the Armed Forces and society play a foremost role.

This attitude is reflected in our motto:

***"The value of serving... and innovating"***

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## AREAS OF ACTIVITY

The Institute appears as a dynamic and innovative technological campus where highly qualified manpower focus on seven technological areas:

1. **Armament Area.** Development of armament and ammunition, scientific research, standardization activities and surveillance tasks for the Armed Forces, State Security Forces and the defence and security industries.
2. **Electronics Area.** Focuses on electronic equipment, radar systems, electronic warfare and robotic system analysis, control and development.
3. **Metrology Area.** Fulfills the Armed Forces gauge and measurements requirements. This area also includes a human factors unit where soldiers' biometric characteristics are measured and evaluated in order to optimise their behaviour under different conditions.



4. **CBN & Materials Area.** (Nuclear, Biological and Chemical) Researches and develops new test procedures for defence, surveillance and protection against "high-risk" agents. These test procedures reduce the diagnostic time, increase the sensibility and improve the actual efficiency. Research in non-energetic materials of interest to Defence is also carried out in this area

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5. **Optronics and Acoustics Area.** Includes research and development units for micro-nanotechnology, sensors and new relevant systems and materials for optical and thermo-vision tests and countermeasures, upgrading systems and optronic devices for ISTAR and CCD applications.
6. **Platforms Area.** Focuses on improving the current efficiency of land and sea vehicles by means of developing tactic and threat environmental assessment systems and optimizing their operability and logistics.
7. **ICTs Area.** (Information and Communication Technologies) Allows the assessment and development of technologies using the technical infrastructure and the CD&E (Concept, Development and Experimentation) process in order to carry out support activities for the development of new operational concepts and for the assessment of emerging technologies.



Furthermore, the ITM co-operates actively with **Observation Systems and Technological Foresight**, whose main role is the technological surveillance inside the defence and security sector, giving support to the **technology observatories network**.

#### ITM FACILITIES

The Marañosa Central Campus is made up of **11 buildings** which contain offices, workshops and 138 laboratories, spanning over approximately **44.000 square metres** and housing more than **800 people**.



Near the Marañosa Central Campus and inside the Marañosa estate are the shooting gallery, the powder magazine and the ballistics effects area, where storage, testing and manipulation activities are carried out with the utmost security.

**Article provided by the Spanish Steering Committee Representative, Maj. Roberto Jenaro de Mencos**

#### LATEST PUBLICATIONS

*(Available on the MSIAC secure website <https://sw.msiac.nato.int/SecureWeb/> or on request at [info@msiac.nato.int](mailto:info@msiac.nato.int))*

#### LIMITED PUBLICATIONS

L163 Insensitive Explosive Materials: III. Brief Status of IHE Materials Currently Considered by Dr Ernst-Christian Koch, March 2010

## COUNTRY VISIT TO FINLAND

A country visit by three Technical Specialist Officers from MSIAC, Dr Ernst-Christian Koch, Mr Pierre Archambault and Dr Michael Sharp, brought them to wintry Finland (temperature below -20°C together with a wind, making the weather really cold) in Tampere on 26/27 January. They participated as lecturers in an MSIAC seminar organised by the Finnish Defence Command, Logistics Division.

The seminar was opened by Colonel Mikko Myllykangas from the Army Materiel Command and chaired by Finnish MSIAC Steering Committee representative, Kari Kykylä. There were more than 40 participants representing both the Finnish Defence Forces and the Finnish munitions industry.



The first goal of the seminar was to update the participants on the state-of-the-art of IM, IM response descriptors and the new versions of the IM STANAG and the IM AOP. The second goal was to increase their knowledge of the services and products provided by MSIAC. The last goal, but not the least, was to inform a broader Finnish audience of some recent Finnish activities concerning IM. An extra item, which was an excellent addition to the other overviews was presented by Mr Wim de Klerk from TNO and covered a study phase of STANAG 4666, which deals with assessment of ageing properties of PBXs.

The first and second goal presentations were mainly given by the MSIAC TSOs. The first goal presentations described the present state-of-the-art of IM munitions, propellants and pyrotechnics. The second goal presentations were given by Finnish NFPO, Heli Nyberg and the MSIAC TSOs covering MSIAC services and how they can be obtained, the content of the MSIAC web pages and what type of software is available.

Finnish presentations on the third goal dealt with the Finnish IM Technology Study and the Army Engineering Charges. Both were presented from two perspectives, first from the customer side with goals, then from the supplier side with results.



The Finnish FITS study was completed in September. It was carried out by Finnish industry with Patria acting as the prime contractor, and was first presented at the last IMEMT seminar in May 2009 in Tucson. The aim of the study was to find out what know-how and technology is already available regarding IM technology in Finland. The results included a profound native and international IM status review of missiles, ammunition (>20mm) and army engineering charges. In the study a preliminary design of less sensitive versions of four definite reference products was produced creating a foundation to order domestic products in the near future.

The background of new army engineering charges is based on the need to replace old Finnish Defence Forces (FDF) infantry mines and army engineering equipment with new ones, and simultaneously fulfill requirements of the Finnish IM policy. Oy Forcit Ab, which has had the responsibility for the development work, also presented at the Tucson meeting the IM response of army engineering charges, which show a very good IM signature in all tests performed. The presentation given in this seminar also described properties of the main charge explosive - FPX V40. It is in the qualification process and with its good insensitivity properties is also suitable for adoption in many other applications.

**Article provided by the Finnish Steering Committee Representative, Mr Kari Kykylä**

## LATEST PATENTS OF INTEREST



US007651577B2

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| <p>(12) <b>United States Patent</b><br/><b>Hiskey et al.</b></p> <hr/> <p>(54) <b>THERMALLY STABLE COMPOSITIONS INCLUDING 2,4,8,10-TETRANITRO-5H-PYRIDO[3',2':4,5][1,2,3]TRIAZOLO[1,2-A]BENZOTRIAZOL-6-IUM, INNER SALT</b></p> <p>(75) Inventors: <b>Michael A. Hiskey</b>, Los Alamos, NM (US); <b>My Hang Huynh</b>, Los Alamos, NM (US)</p> <p>(73) Assignee: <b>Los Alamos National Security, LLC</b>, Los Alamos, NM (US)</p> <p>(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 364 days.</p> <p>(21) Appl. No.: <b>11/879,842</b></p> <p>(22) Filed: <b>Jul. 18, 2007</b></p> <p>(65) <b>Prior Publication Data</b><br/>US 2008/0185081 A1 Aug. 7, 2008</p> <p><b>Related U.S. Application Data</b></p> <p>(62) Division of application No. 10/743,574, filed on Dec. 22, 2003, now abandoned.</p> <p>(51) <b>Int. Cl.</b><br/><i>C06B 25/34</i> (2006.01)<br/><i>C07D 249/16</i> (2006.01)</p> | <p>(10) <b>Patent No.:</b> <b>US 7,651,577 B2</b></p> <p>(45) <b>Date of Patent:</b> <b>Jan. 26, 2010</b></p> <hr/> <p>(52) <b>U.S. Cl.</b> ..... <b>149/92; 548/258</b></p> <p>(58) <b>Field of Classification Search</b> ..... 149/92; 548/258<br/>See application file for complete search history.</p> <p>(56) <b>References Cited</b><br/>U.S. PATENT DOCUMENTS<br/>3,166,567 A * 1/1965 Carboni ..... 548/258</p> <p style="text-align: center;">FOREIGN PATENT DOCUMENTS</p> <p>EP 0104717 * 4/1984</p> <p>* cited by examiner<br/><i>Primary Examiner</i>—Taylor Victor Oh<br/><i>(74) Attorney, Agent, or Firm</i>—Holly L. Teeter; Samuel L. Borkowsky</p> <p>(57) <b>ABSTRACT</b><br/>An explosive formulation including 2,4,8,10-tetranitro-5H-pyrido[3',2':4,5][1,2,3]triazolo[1,2-a]benzotriazol-6-ium, inner salt and a high temperature binder is disclosed together with a process of preparing 2,4,8,10-tetranitro-5H-pyrido[3',2':4,5][1,2,3]triazolo[1,2-a]benzotriazol-6-ium, inner salt.</p> <p style="text-align: center;"><b>4 Claims, No Drawings</b></p> |
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Provided by <http://www.patentstorm.us/patents/7472653/fulltext.html>



**NDIA**  
National Defense Industrial Association



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**2010 Insensitive Munitions and Energetic Materials Technology Symposium**  
International Progress in Insensitive Munitions and Energetic Materials



**OCTOBER 11-14, 2010**  
**MUNICH, GERMANY**

[WWW.NDIA.ORG/MEETINGS/1550](http://WWW.NDIA.ORG/MEETINGS/1550)

EVENT #1550

## ACCIDENTS REPORTING

7 January - 2 April 2010

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from their Hazards Intelligence (Hint) Journal)*

### 7 January - USA

100107-16-A Lubbock, TX

A Texas Tech graduate student was hospitalised at the University Medical Center (UMC) after he was burned in a chemical explosion on the campus. The victim received severe burns to his face and hands when nickel hydrazine perchlorate he was working with exploded at about 16:00. Cory Chandler, a spokesman for the university, said another student was taken to UMC with minor injuries.

On January 19, the CSB said it would investigate the causes of the explosion. University officials told the CSB the accident occurred in the chemistry department during the handling of a high-energy metal compound, which suddenly detonated. Texas Tech had entered into an agreement with Northeastern University, which holds a contract from the Department of Homeland Security to study the high-energy materials.

CSB Chairman John Bresland said: "We see serious accidents in high school and university labs every year, including a tragic fatality a year ago at UCLA. I believe it is time to begin examining these accidents to see if they can be prevented through the kind of rigorous safety management systems that we and others have advocated in industrial set-tings". Mr. Bresland said the CSB planned to collect information on several laboratory accidents for a future study on the topic.

### 20 January - Iran

100120-02 Bandar Abbas southern province of Hormozagan



IRAN

An explosion occurred around 09:00, damaging properties and leaving three people injured at a military base. Police and Security Chief of Hormozgan province Mohammad Hassan Poravar said: "Garbage collected at the base was set on fire, which caused the explosive charge to go off. Three people were wounded in the explosion. They have been taken to hospital for medical treatment and there has been no further damage. Nothing else happened, and the rumours going around in the city are all baseless and untrue".

Fars News Agency, citing eyewitnesses, reported that several nearby houses sustained different levels of damage and fire broke out following the incident. According to eyewitnesses, shrapnel as big as a cellular phone and with a

thickness of two centimetres flew by and landed in the yards of houses about 1 km away from the blast site.

### 3 February - Bulgaria

100203-02-B Village of Gorni Lom Municipality of Chuprene. Midzhur Co.

The National Medical Co-ordination Centre said four people were injured in an explosion at 18:12 at the Midzhur explosives plant. Two of the injured were released after a check-up in the hospital, but a 62-year-old man sustained a broken thigh bone and knee joint, and a 44-year-old man suffered head and eye injuries. He was rushed to Tsaritsa Yoanna hospital in Sofia.

According to initial information, there might be land mines in the warehouse where the explosion occurred after a machine broke down and started a fire. Explosions were reported throughout the night. Interior Minister Tsvetan Tsvetanov said access to the building had been restricted. He said the fire broke out in a warehouse of a private firm, and the first explosion occurred in a building where 10 tonnes of ammonite were stored. Fire fighters arrived at the scene, but withdrew after the explosion. The fire had been contained, but the fire fighters will not enter the warehouse again until they find out whether there are other explosives in it. A crisis office was set up, headed by Commissary Nikolov, director of the National Fire Safety and Rescue Service.

Lieutenant Colonel Nikolay Nikolov, director of the National Fire Safety and Rescue Service, said there was no danger for the residents of the village of Gorni Lom, and no people are in danger if there is a new explosion. Gorni Lom has 780 inhabitants, as 150 of them work in the Midzhur plant. Plamen Stefanov - District Governor of Vidin - said the population of the village can be evacuated, if necessary, although this measure is not needed at the

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moment. He added that: "The quality of the air is being measured every 30 minutes, and there are no departures from the norms, at the moment".

On February 4, Bulgarian Deputy Minister of Defence, Valentin Radev, said the mines were stored according to all requirements. He said the mines are in the other part of the plant's territory, and are not many in number. In addition, they were stored in a way ammunitions are stored in the army - in separate rooms, in separate warehouses, there is enough distance between them, and there is no connection to the production of these explosive materials. Radev said the explosion that occurred was due to fire that burst out from powder materials on the assembly line for explosive materials production, explaining: "Probably some machine on this installation has burnt out and some fire impulse occurred. This is the good outcome, since if there had been a detonation impulse, then the effect of the blast would have been much bigger because of the almost 10 tons of materials, which by the way make more than 2-3 tons of trotyl equivalent".

### **8 February - India**

100208-04 Christianpettai near Katpadi in Vellore, Tamil Nadu

Tamil Nadu Industrial Explosives Limited (TEL). Seven employees, including a senior plant engineer and a senior technologist, of the Tamil Nadu Industrial Explosives Limited (TEL), were injured in an explosion on the factory premises while carrying out maintenance work.

Managing Director of TEL, Mr Mohan, who called on the injured at the hospital, said that an explosive chemical called Penta Erytratol Tetra Nitrate [sic. Correctly: Pentaerythritol tetranitrate]. PETN used to be dissolved in a tank containing acetone as part of the explosive manufacturing process. He said that the employees were involved in carrying out maintenance work at shed number 504 of the factory, as the technical and administrative staff had been on strike for the last 13 days.

Katpadi DSP Pattabi, who visited the spot and conducted preliminary investigations, said the workers were removing a 25-year-old dissolver, used to dissolve PETN in acetone solution, and were to replace it with a new one. When they were removing the bolts of the vessel that were fixed to the cement flooring, previously spilt PETN exploded and injured them, he said. They were rushed to the Christian Medical College Hospital within half an hour.

PETN is quite difficult to detonate, but is shock sensitive. We wonder whether they were using a pneumatic drill or even a hammer and chisel. Once again, a lesson in the need for good hygiene: if the spill(s) had been properly cleaned up, there would have been no PETN present to explode [sic].

### **17 February - Portugal**

100217-08 Parish of Taíde, Póvoa de Lanhoso, Braga district. Moura, Silva & Filhos S.A.

Two people died, victims of an explosion that occurred in the explosives factory, located in Cima de Vila, in the parish of Taíde. The incident happened around 11:50, apparently as the two victims were destroying waste. Moura, Silva & Filhos, the factory where the explosion took place, employs about 50 people.

According to Carlos Macedo, of the Associação Portuguesa dos Industriais de Pirotecnia e Explosivos (APIPE – Portuguese Association of Industrial Explosives and Pyrotechnics), the accident was in an area for burning waste. The two workers were standing on their own, burning such waste, a task that is done daily, and which is common to these type of companies. Carlos Macedo said: "This is the burning of small quantities of waste. The legislation requires the premises do the burning, especially for packages that come with returned explosives. There is specific legislation, and they cannot be held in any store. They have to be destroyed in a proper place, duly authorized by the National Directorate of PSP, and properly monitored and controlled". He said the company has been in business for several years and has all the required licenses. Carlos Macedo also said that only after the inquiry by the Department of Arms and Explosives of the PSP will the causes of the explosion be known.

Lt. Silva Pereira, acting commander of the DGND de Lanhoso, confirmed that the explosion resulted from the burning of some waste, in a proper structure for burning, and one that is in a secluded location. Lt. Silva Pereira said the explosive materials being burned included Gemulite [apparently a trade name belonging to the company], a material used in fracturing rock, which had been delivered, then returned to be burned. He said that burning of Gemulite alone does not cause an explosion.

### **1 March - South Korea**

100301-02 Angangeup, Gyeongju, North Gyeong-sang. Poongsan Corporation.

Two workers were killed in an explosion at a munitions plant in Angangeup. Police said the two victims, who were working in a detonator room at Poongsan Corporation, died instantly. The explosion, which occurred around 11:45, damaged half of the 60-square-metre (645-square-foot) plant. The cause of the explosion is not yet known.

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Police said the site of the explosion was a room where workers produce gunpowder detonators. The detonators are used with small-calibre ammunition designed for M16 rifles. At the time of the explosion, rain was falling heavily and no additional blast took place. An executive at the plant reportedly said: "Detonators almost never explode, so we can't tell what the cause is now. We are going to investigate by sending the company's security team to the scene. Police will also provide assistance". A police officer who requested anonymity said, "We will first examine security conditions in the room. We're going to examine the site of the explosion, then question firm executives".

### **2 March - Spain**

100302-09 Ceuta (Spanish enclave on the coast of Morocco) Blasting SL-Movements.

Ten people were injured, three of them seriously, in an attempt to blow up excess material from dynamite blasting in an area near the border with Morocco, where the new city jail is being built. Sources in the Government Delegation in Ceuta reported that the explosion occurred just after 20:30, when the workers, all from the same company, were preparing to destroy the excess material from blasting performed to prepare the ground in the area near Fort Mendizabal, near the border with Morocco.

The most seriously injured suffered second-degree burns, lost vision in one eye, had several fractures, and remained in the ICU at University Hospital of Ceuta in a very serious state. Two others remained serious in the ICU with multiple injuries.

The government delegate in Ceuta, Jose Fernandez Chacon announced the opening of an investigation to determine the causes of the explosion which he described as "illogical, there is no logical explanation for what happened, so it will be investigated to the last consequences". The delegate said that the company in charge of blasting had taken all appropriate security measures for the destruction of surplus equipment at the site. The technicians came to destroy 450 kilos of riojel and 13 detonators that were left over out of 4,550 kg used. Fernandez confirmed that the company had all the necessary permits, and acknowledged that "it is a very strong company, reliable and very experienced in the use of explosives".

### **3 March - Mexico**

100303-08 Municipality of Tequila, Jalisco state

A father and son received second- and third-degree burns over the whole body in an explosion which occurred while handling potassium nitrate in a grinder. The Public Safety Department of State (SSPE) reported that the incident occurred on the farm number 4 Calle Miguel Dominguez, at its intersection with the road to La Mula, in the colony of the same name. The official report issued by the agency said the injured people told the city police that they were grinding the acid [sic] in a mill, when the latter suffered from a short circuit that generated a spark, which in turn caused the explosion.

### **6 March - Montenegro**

100306-03 Nikšić, northern Montenegro. Buster plc

A worker lost his right hand in an explosion in a former army depot near the town of Nikšić. Two other workers employed by the Buster company were also hurt when an aerial bomb exploded during an attempt to disarm it. Their injuries were described as minor. Montenegro's MoD stated in Podgorica that the Trubjela depot was given over to Buster, which undertook to dispose of the surplus and obsolete weapons found there.

### **13 March - Ukraine**

100313-02-A Village of Hruzevytsya, Khmelnytsky Region. Ukroboronservis

A fire caused the detonation of ammunition at the state-run Ukroboronservis enterprise. One man was slightly injured. The press service of the Emergencies Ministry said that the fire started at around 13:00 GMT. According to preliminary reports, small calibre explosive ammunition for aircraft detonated in the fire. The fire was put out at 14:10.

On March 15 it was reported that the incident occurred when 23-millimetre shells stored in crates at the company's warehouse were being loaded, and spontaneous ignition of one of the crates caused the shell detonation.

### **14 March - India**

100314-04 Pokhran, Jaisalmer district, state of Rajasthan.

In an accident apparently caused by defective ammunition, four private soldiers were killed and three others injured when the barrel of a 81mm mortar burst at the Pokhran field firing range. The incident occurred when the victims, belonging to the Maratha Light Infantry, and Jammu and Kashmir Light Infantry units, from the 35 Brigade based in Delhi, were taking part in routine night-firing exercises. While one of the jawans died on the spot, three others

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succumbed to injuries on the way to the Jodhpur military hospital. The condition of the three injured was stated to be serious.

There has been heavy criticism of frequent incidents due to old munitions. Following the December 2001 attack on the Parliament in New Delhi, over a million mines were laid along the Indo-Pakistan border. Scores of soldiers lost their lives in the mining and subsequent de-mining operations, with several of the accidents being caused by the poor quality of some mines and fuses held in the inventory for a long time.

In March 2008, three soldiers were also killed in a "mortar burst" during the large-scale Brazen Chariots exercise at Pokhran. [See HInt 08-03, 080320-06]. A 125-mm mortar exploded as the personnel were firing it for a live demonstration while the army's top brass, defence attaches and diplomats from foreign countries were watching the exercise.

### **19 March - Mexico**

100319-14 Atequizayán, Municipality of Zapotlán El Grande, Jalisco state

One person was killed and one injured by the explosion of a magazine on the Olot estate. The State Unit of Civil Protection and the Ciudad Guzmán Fire Command provided the necessary aid. While both the judiciary and the expert from the Jalisco Institute of Forensic Sciences did their work, staff of the Civil Protection Unit and Fire cordoned off the scene to prevent any risk. The cause of the accident is not yet known.

### **22 March - India**

100322-05 Tavarekere village, Ramanagaram district, 40 km from Bangalore

Two people died as explosives they were carrying on a motorcycle detonated. The police suspect that the explosive material was ammonium nitrate gel sticks, used for quarrying, but the nature of the material is yet to be ascertained by the Forensic Scientific Laboratory (FSL). An FSL officer suggested the explosion may have occurred since the explosives were placed on the fuel tank of the vehicle and the heat could have been the triggering factor. Police said the victims held a licence under the Indian Explosives Act, but were ignorant about the perils of handling explosive material. The two men had violated rules of transportation of explosives.

The incident occurred at 13:45 when two people identified as Yelumalai and Arun Kumar were about a kilometre from Tavarekere village. Arun Kumar was riding his motorcycle, and Yelumalai was the pillion rider. The explosives went off suddenly and the two men died on the spot with their bodies being torn into several pieces. Yelumalai's body was found 50 metres away from the blast spot. Arun Kumar's head was flung 500 metres away from the spot while the body fell 100 metres away, torn into several pieces. The vehicle was destroyed.

BG Bisenahalli, superintendent of police, Ramanagaram district, said the place where the incident happened belonged to a retired Colonel Kaira, who had bought 80 acres of land in Chikkaveeranannapalya: "The owner was developing the place into a layout and had given the contract to a developer identified as Lakshman, who owned Raynal Realtors, and the office is situated at the spot. They used to bring gelatin sticks and store them in the office and use it to blast the quarry to develop the lay-out".

### **26 March - India**

100326-04 Panagarh, Durgapur sub-division, Bardhaman district, West Bengal.

An ammunition depot caught fire at the army base in Panagarh. An army spokesman said the fire broke out around 01:15 at the sixteenth shed of the depot that contained small arms, ammunition and explosives. The army's own crisis management team, headed by Colonel A.D. Sethi, led the fire-fighting, and the blaze was brought under control in about two hours. It was completely doused around 04:30. Wing Commander Mahesh Upasani, the chief public relations officer of the army in the eastern region, said: "There was no loss of life and no one was injured. A team led by a major general (in charge of ordnance) has gone to the spot to ascertain the cause of the fire and extent of damage. We kept small arms, ammunition and explosives in that shed". According to defence sources, nearly 200 tonnes of small arms, explosives and shells were destroyed.

### **29 March - USA**

100329-03 Hopewell, near Asheville, NC.

The Asheville Police Department Hazardous Device Team said it "was caught off guard by the power unleashed from some decaying dynamite and fertilizer they removed from a Madison County barn". The 148 sticks of dynamite had leaked into several pounds of fertilizer, creating an explosion that blasted a 30-foot-wide hole in a hillside near where it was found. The explosion tossed up a ton of dirt, showering it on nearby cars and houses. Windows were shattered in the nearest house and the siding above the porch was ripped off by the shock wave. Asheville Bomb Squad Lt. Wally Welch said: "I really didn't expect that old dynamite to have such explosive force".

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He had detonated the explosives more than 60 yards from the house, which had seemed a safe distance.

The EOD squad had been called to the farm in the Hopewell community to deal with the decaying fertilizer and dynamite found in a barn owned by the family of a former dynamite expert. Madison County Sheriff Buddy Harwood contacted the EOD squad after the homeowner called his office to report the unstable chemicals. Arnold Bullman, who had discovered the dynamite, said it had belonged to his father, who worked for the state blasting rock for 46 years. Harwood said: "He used to shoot rocks for the state".



## 2 April - Brazil

100402-08 Lorena, São Paulo state. Orica.

An explosion at the Orica factory frightened residents of Loena, but caused no injuries. A warehouse at the factory, which produces controlled explosives for sale, exploded shortly after 22:00. Workers were on the third shift at the time of the accident, but according to Orica, there was no-one at the site where the material exploded. According to the Guaratinguetá district Fire Department, there were no casualties, and only structural damage was found. The event ended at around 02:30 the next morning.

## ACQUISITIONS

### RHEINMETALL TAKES OVER ITALIAN ARMAMENT MAKER

(Extract from DefenseNews - 16 April 2010)

BERLIN - Germany's Rheinmetall Group has acquired the defense operations of Italian armament company Società Esplosivi Industriali (SEI). Düsseldorf-based Rheinmetall says the takeover is part of a strategy to "widen its lead in the European defense technology industry".

The newly created subsidiary will operate as RWM Italia Munitions.

SEI is a manufacturer of aircraft weapons and underwater weapons. Rheinmetall has declared its interest in expanding its activities in both these fields. SEI makes Mk 80 series aircraft bombs, and military and commercial explosives at the Domusnovas plant in Sardinia. The site includes test facilities and a firing range. Its headquarters is in Ghendi.

### CHEMRING GROUP ACQUIRES THE ALLIED DEFENSE GROUP

(Extract from DefenseNews - 25 January 2010)

Chemring Group announced on January 19 the acquisition of US-based ammunition supplier The Allied Defense Group. The cash deal will cost the British defense company USD 59 million.

Headquartered in Vienna, VA., Allied Defense is a niche supplier of medium- and large-caliber ammunition and services, particularly for light armored vehicles based on its main subsidiary - Nivelles, Belgium-based Mecar SA - and the smaller Mecar USA operation at Marshall, Texas.

### MSIAC CONTACT INFORMATION

☎ 32-2-707.54.16

📠 32-2-707.53.63

🌐 <http://www.msiac.nato.int>

✉ [info@msiac.nato.int](mailto:info@msiac.nato.int)

## PROCUREMENT ISSUES PRESS REVIEW

*If you have information you consider of relevance to this section please do not hesitate to contact MSIAC at [info@msiac.nato.int](mailto:info@msiac.nato.int)*

### COLLABORATION ON BOMBS

([www.defensenews.com](http://www.defensenews.com) - 25 January 2010 and  
[www.defenseworld.net](http://www.defenseworld.net) - 20 January 2010)

Boeing has signed a \$34 million contract with Italy's Oto Melara to co-produce the Small Diameter Bomb Increment I (SDB I) weapon system for the Italian Air Force.

Under the contract, Boeing will provide major SDB I mechanical and electrical components and test equipment for production of 500 weapons, 50 four-place weapon carriages, and associated support equipment. In addition, Boeing will help start up a production facility in Italy. Oto Melara, a unit of Italy's Finmeccanica group, will complete final weapon assembly and testing.

The SDB I co-production project follows previous joint collaborations between Oto Melara and Boeing, including production of about 1,000 Joint Direct Attack Munition (JDAM) tail kits for the Italian Air Force.

SDB I is a 250-pound class, low-cost and low-collateral-damage precision strike weapon. The SDB bomb is 1.8 m long with a 19 cm diameter. It incorporates a steel case containing approximately 23 kg of AFX-757 explosive. It could perforate more than 1 m thick steel reinforced concrete.

The SDB is the second US munition to be assigned a 1.2.3 Hazard Storage SubDivision (SsD 1.2.3.). This classification requires a high level of IMness as the munition reaction must be at the most burning (type V) to fast cook-off, slow cook-off and bullet impact and explosion (type III) to sympathetic reaction aggression.



GBU-39 Small Diameter Bomb



Carriage to fit 4 SDB Units in the Bay of an F-22 Aircraft

### SAUDI ARABIA BUYS MBDA MISSILES

([www.defensenews.com](http://www.defensenews.com) – 19 February 2010)

Saudi Arabia has signed a deal to acquire the Storm Shadow cruise missile from European weapons builder MBDA as part of a Tornado strike aircraft update package, said industry sources. The weapons package also includes the Brimstone anti-armor missile, they said. There is no detail on the number of missiles or the contract value.

*(Continued on page 13)*



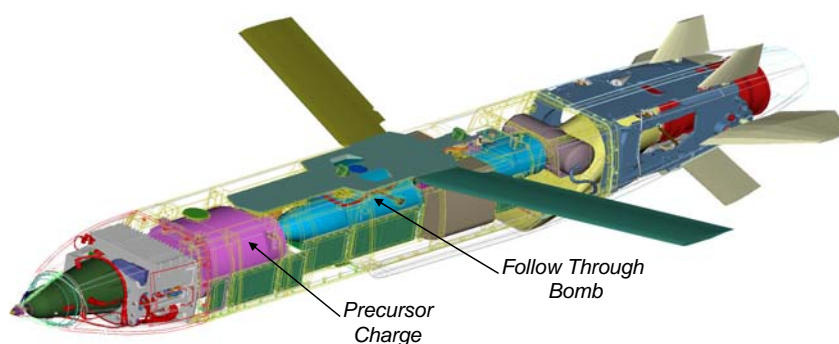
(Continued from page 12)

Earlier plans to include the ASRAAM short-range air-to-air missile ended last year when the Saudis selected Diehl BGT Defence's rival IRIS-T for Tornado and the Typhoon fighter (see third quarter MSIAC Newsletter in 2009).

Storm Shadow is an air-launched cruise missile with a range in excess of 250 km and optimised for use in pre-planned attacks against heavily defended, hardened and high value fixed targets. To penetrate and destroy very thick reinforced concrete, it is equipped with a dual charge system, consisting of a Precursor Charge (PC) to provide the penetration and a Follow Through Bomb (FTB) to provide the destructive power. These charges are filled with IM explosive compositions (PBXN-110 for the PC and PBXN-109 for the FTB) and incorporate a number of mitigation features.

Storm Shadow has a very good IM signature: it is reported to pass slow and fast cook-off, bullet impact tests (type V) in bare missile configuration and sympathetic reaction (type IV) in logistics container. No fragment impact test has been performed and a type V reaction has been assessed by analysis.

Thanks to this remarkable IM performance, Storm Shadow has been labeled MURAT 1\* in France and has been classified as Hazard Division 1.2.



Storm Shadow Missile Architecture



Two Storm Shadow Missiles Carried by a Rafale



## REMINDER

### CALL FOR NOMINATIONS FOR THE 2010 MSIAC IM AWARDS

In order to acknowledge and encourage progress and achievements in Insensitive Munitions technology, MSIAC has been presenting Awards for IM excellence at all NDIA IM/EM Technology Symposia since 1997.

The next MSIAC IM Awards will be presented at the 2010 NDIA IM/EM Technology Symposium (12-14 October, München, Germany).

Please submit nominations via your National Focal Point Officers, your MSIAC Steering Committee representative or directly to MSIAC.

See the last newsletter for more details.

**FINAL ANNOUNCEMENT****MSIAC WORKSHOP ON SENSITIVITY OF ENERGETIC MATERIALS  
– MODELLING \* SYNTHESIS \* FORMULATION –**

NATO Munitions Safety Information Analysis Center  
NATO HQ, Bruxelles  
May 11-12, 2010

**TOPICS**

- Molecular Sensitivity Models
- Macroscopic Sensitivity Models
- Synthesis of Insensitive High Explosive Materials (IHEM)
- Formulating insensitive Materials
- Determine Actions to be taken by Community
  - Industry
  - Research Institutes
  - Policy Makers

**PROGRAMME****May 11**

- Session I Molecular Origins of Sensitivity
- Session II Macroscopic Origins of Sensitivity

**May 12**

- Session III Insensitive Molecules & insensitive Formulations
- Session IV Outlook

**LECTURES**

|                       |   |
|-----------------------|---|
| <b>R. ARMSTRONG</b>   | Consequent Dislocation Mechanics for Hot Spots in Impacted Energetic Materials                                  |
| <b>S. BENALET</b>     | Chemical Physics Approach of the Energetic Compounds Sensitivity  |
| <b>M. COMET</b>       | Desensitization of Energetic Materials to Friction  |
| <b>D. DLOTT</b>       | Molecular Origins of Sensitivity  |
| <b>S. GALLIER</b>     | Multiscale Modeling for the Dielectric Breakdown of Energetic Materials   |
| <b>P. GERBER</b>      | Comparison of PBX Formulations Based on Hexogen and Octogen with Sensitive and Less Sensitive Crystal Qualities |
| <b>A. HAHMA</b>       | Energetic Materials Based on TATB Precipitated on HMX   |
| <b>M. HERRMANN</b>    | Crystal and Micro Structure of Energetic Materials and its Relation to Sensitivity.                             |
| <b>E.-C. KOCH</b>     | Review on State of the Art Insensitive High Explosives  |
| <b>P. POLITZER</b>    | Molecular and Crystalline Factors that Affect Impact Sensitivity  |
| <b>M. W. SHARP</b>    | Small Scale Screening Methods for Candidate Insensitive High Explosives   |
| <b>C. SPYCKERELLE</b> | Title not yet announced   |

**For registration please send an e-mail to  
e-c.koch@msiac.nato.int  
or  
info@msiac.nato.int**

## MSIAC NEWS

### WELCOME TO ROGER SWANSON

Roger Swanson took over as the Project Manager on April 6, 2010.

Roger is a recognized expert in energetic (propulsive and explosive) materials, Test & Evaluation, safety/risk analysis, and Systems Engineering, Reliability, and Safety for weapons and ordnance systems. He has served in several weapons and ordnance engineering, logistics, management, and leadership positions throughout his over thirty years of service with the US Navy, lastly as the Director of Weapons Assessment for the US Naval Ordnance Safety and Security Activity (NOSSA).



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### FAREWELL TO PATRICK TOUZÉ

After nearly eight years as Project Manager, Patrick moved on to new pastures on April 1, 2010.

Under his leadership there was the transition to MSIAC, the move to Building Z, new administration memorandum with NATO, new job descriptions, creation of and co-operation with AC/326, the strategic planning process, strategic plan, work plan, Denmark leaving and Germany joining,

He has now been appointed Head of the Planning, Policy & Partnerships Section of the Armaments Directorate, Defence Investment Division, International Staff at NATO HQ.

We would like to thank him for all his support over the years. We wish him well in his new post and look forward to seeing him as he will not be far away.



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### JOB VACANCY

#### TECHNICAL SPECIALIST OFFICER, PROPULSION TECHNOLOGY

Applications must be submitted using the NATO application form, which is available on the Recruitment web site [www.nato.int/structur/recruit/how-to-apply.html](http://www.nato.int/structur/recruit/how-to-apply.html).

You can also visit our website [www.msiac.nato.int](http://www.msiac.nato.int) for a copy of the job description.

Closing date for applications is Wednesday, 16 June 2010.

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